

**TITLE: An improved structure of a buckle to fasten shoelaces**

This is a continuing application of an U.S. Pending application Ser. Nr.10/223,250 Filed Aug. 20, 2002.

**BACKGROUND OF THE INVENTION**

5       The present invention relates to shoelaces and more particularly to an improved structure of a buckle to fasten shoelaces which is convenient to apply, good stability and presents beautiful effect.

10       Normally, to put on shoes, one has to fasten the shoelaces by making a knot on the vamp. The knot may be loose due to the walking, running and/or jumping of the wearer. So one has to fasten again. Further, every time, one has to make knot after puts on the shoes and has to loosen the knot before takes off the shoes. This is a rather wearisome job for a  
15       wearer of the shoes. Thus, some of the producers adopts the Velcro (hook & hoop) instead the shoelaces to fasten the vamp of the shoes. However, most people prefer the shoelaces rather than the Velcro to fasten their shoes. So that the question is appeared about how to provide a simplified means  
20       to fasten the shoes instead of to make a knot.

      The applicant has a previous disclosure tiled "Structure of a buckle to fasten shoelaces" which is already allowed by the USPTO and which can be able to tightly fasten the shoelaces, quick and convenient and is therefore welcomed  
25       to the consumers. But it still has some disadvantages such

that the unfastening action is not so smooth and the stopping of the shoelaces is not perfect. For making a butterfly type knot on vamp, an additional plate has to be sewn on the vamp to receive the tags of the shoelaces. However, most of the consumer have no willingness to sew that plate on their vamp. That's why the further improvement is required.

#### SUMMARY OF THE PRESENT INVENTION

The present invention has a main object to provide an improved structure of a buckle to fasten the shoes by which the shoelaces are stably fastened or unfastened with readily and convenient actions.

Another object of the present invention is to provide an improved structure of a buckle to fasten the shoelaces in which the buckle has a cap of varied colors to present more beautiful to look at.

Further object of the present invention is to provide an improved structure of a buckle to fasten the shoelaces which enables the tags of the shoelaces to inversely insert into the buckle to make a butterfly configuration for the shoelaces.

Accordingly, the improved structure of a buckle to fasten the shoelaces of the present invention comprises generally a box like arcuate main body, an elastic plate mounted on the top of the main body and a cap covering the elastic plate. A pair of sliders slidably disposed in the main body which has a pair of inward flanges on the top to define a

longitudinal gap therebetween, a pair of inlets and a pair of outlets symmetrically formed in the bottom with the outlets positioned at the outside of the inlets, a pair of protrusions at two ends, and a pair of cross-shaped through holes formed respectively in the front and the back walls for permitting the sliders entered into the main body. The elastic plate has the inverse U-shaped end walls with detent means and projections on their inner side. The detent means engage within the main body and their projections are functioned to stop against the sliders. The cap has a pair of lateral walls each of which has a retaining flange on a predetermined inner side to be engaged with the bottom of the main body. Thereby a pair of the tags of the shoelaces respectively insert into the inlets and pierce out from the outlets through longitudinal gap of the main body and respectively surround the sliders. When the shoelaces are tensed under the inlets and the sliders are stopped again the projections, they can be freely moved about. When the shoelaces are tensed from the lateral side of the inlets, the sliders slide toward outward so as to fasten the shoelaces. When press and pull the elastic plate upward, the shoelaces are immediately loosened. Further, the cap covering the main body and elastic plate to keep the uniformity for the buckles and the tags of the shoelaces can be inversely inserted into the buckles to make a butterfly configuration for the shoelaces to present

beautiful outlook. In other consideration, the cap may be omitted and instead of applying the colors, patterns and/or fluorescence's on the top of the elastic plate and making a pair of retaining grooves in the appropriate position of the elastic plate. By this improvement, the buckle not only becomes thin but also achieves the objects of the present invention.

The present invention will become more fully understood by reference to the following detailed description thereof when read in conjunction with the attached drawings.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is an exploded perspective view of the preferred embodiment of the present invention,

Figure 2 is a top sectional view to show the assembly of the buckle of the present invention,

Figure 3 is a vertical sectional view of Fig. 2,

Figure 4 is a sectional view to show the inserting in and piercing out of the shoelaces of the buckle,

Figure 5 is a sectional view to show that the shoelaces are already fastened,

Figure 6 is a sectional view to show that the buckle is pulled upward to unfasten the shoelaces,

Figure 7 is a perspective view to show that the distal portions and the tags of the shoelaces are hanging down on the vamp of a shoe, and

Figure 8 is a perspective view to show that the tags of the shoelaces are inversely inserted into the buckle to present a butterfly configuration for the fastened shoelaces.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

5        With reference to Figs. 1, 2 and 3 of the drawings, the improved structure of a buckle to fasten shoelaces of the present invention comprises a box like arcuate main body 10 which has a hollow interior, a longitudinal gap 11 in the top to define a pair of flanges 15 on front and back side toward  
10    inward, a pair of inlets 12 and a pair outlets 13 symmetrically and spacedly formed in the bottom thereof with the pair outlets 13 positioned at outside of the pair of inlets 12, a cross-shaped through hole 17 centrally formed in front and back walls thereof for entering a pair sliders 14 each of  
15    which has a deep arcuate depression 141 in one side and a striped shallow arcuate depression 142 in the other side and is respectively positioned between each one of the inlets 12 and the outlets 13 and confined by the flanges 15, and an inverse U-shaped check plate 16 at each end thereof, an  
20    arcuate elastic plate 30 mounted on the top of the main body 10 having an inverse U-shaped striped outer surfaced wall 31 at each end and each having a pair of rectangular detent means 34 spacedly formed on inner side and each of the detent means 34 including a projection 35 on front side,  
25    wherein the detent means 34 engage with the under side of the

flanges 15 of the main body 10 and the projections 35 stops against the outer side of the sliders 14, an arcuate cap 50 covering the elastic plate 30 and the main body 10 having a back wall 51 and a front wall 52 and each of the walls 51 and 52 has a retaining flange 511 and 521 on a predetermined position of inner surface held by the bottom of the main body 10, wherein the front wall 52 has a pair of semi-circular retaining grooves 522 in outer surface and each has a narrow portion at the inner end for permitting the tags 21 of the shoelaces 20 squeezed in. Further, the upper surface of the cap 50 may be varied in different colors and/or decorative designs.

Referring to Fig. 4, in application, insert the tags 21 of the shoelaces 20 into the inlets 12 and surround the top of the sliders 14 via the gap 11 in the top of the main body 10, then pierce the tags 21 out of the main body 10 through the outlets 13 and then mount sequentially the elastic plate 30 and the cap 50 onto the main body 10 (as shown in Fig. 5) meanwhile, pull the tags 21 freely outward until the buckle engaged with vamp 41 of a shoe 40 and a reaction force came from the vamp 41 to stretch the shoelaces 20. When the shoelaces 20 could not pull laterally due to the friction on the inner side and lower corner of the inverse U-shaped check plates 16 and the lateral movement of the sliders. So that the shoelaces 20 are fastened (as shown in Figs. 5, 6 and 7).

However, the shoelaces 20 can be still pulling out as if the sliders 14 are not closed to the check plates 16 but in loose state.

Referring to Figs. 7 and 8, after the fastening of the shoelaces 20, the tags 21 are hanging downward on the vamp 41 (as shown in Fig. 7). If the hanging outer portion of the shoelaces 20 is too long, it will cause an obstruction even to trip over the wearer. So that the retaining grooves 522 on the cap 50 are provide to enable the tags 21 to return insert into the buckle to make a butterfly configuration (as shown in Figs. 3 and 8) which may beautify the buckle.

When unfasten the shoelaces 20, simultaneously press the walls 31 at two ends of the elastic plate 30 with two fingers. Then the walls 31 move inward and their projections 35 push the sliders 14 to move slightly inward so that the sliders 14 and the check plates 16 will not trip the shoelaces 20. Meanwhile, pull the buckle upward to loosen the shoelaces 20.

The buckle of the prevent invention not only provide a simplified assembly and a convenient application but can be also adopted to the fastening means of the safety helmet, the bags and/or the life belts.

The addition of the cap 50 presents an uniform out look for the buckle and protects the elastic plate 30 and the main body 10. Besides, the surface of the cap may be varied in different colors or patterns and/or the luminous markings.

Further, the detent means 34 of the arcuate elastic plate 30 are designed to a rectangular shape aims to facilitate the detent means 34 easily held by the flanges 15 of the main body 10 and the projections 35 thereof become slant when  
5 presses the walls 31 at two ends of the elastic plate 30 that enable the projections 35 to properly push the shoelaces 20 and the sliders 14 moving inward. The retaining grooves 522 enable the tags 21 to return insert in so as to present a butterfly configuration on the vamp 41 of a shoe 40.

10 In other consideration, the cap 50 may be omitted and instead of by applying the colors, patterns and luminous markings on the top of the elastic plate 30 and make a pair of retaining grooves 522 in an appropriate position of the elastic plate 30. This improvement may make the buckle  
15 becoming thin and the objects of the present invention are also achieved.

Note that the specification relating to the above embodiment should be construed as an exemplary rather than as a limitative of the present invention, with many variations  
20 and modifications being readily attainable by a person of average skill in the art without departing from the spirit or scope thereof as defined by the appended claims and their legal equivalents.